DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/08/2009 has been entered. Currently, claims 1-10 are pending.

Response to Arguments

2. Applicants' arguments filed 01/08/2009 have been fully considered but they are not persuasive.

3. With respect to applicants' arguments that "None of the cited references teach or suggest that the projection protruding beyond the lens toward the photosensitive recording medium is held in direct contact with the photosensitive recording medium".

In reply: Aosaki '359 does not explicitly show the projection protruding beyond said lens toward said photosensitive recording medium and being held in direct contact with said photosensitive recording medium.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Klees '767. In particular, Klees '767 teaches the projection

protruding beyond said lens (lens 30, fig. 1) toward said photosensitive recording medium (photosensitive media 34, fig. 1) and being held in direct contact with said photosensitive recording medium (i.e., the part of print head assembly 26 that is in contact with photosensitive media 34 is the projection; Col. 4, lines 25-30, fig. 1).

In view of the above, having the system of Aosaki and then given the well-established teaching of Klees, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Aosaki as taught by Klees to include: the projection protruding beyond said lens toward said photosensitive recording medium and being held in direct contact with said photosensitive recording medium, since Klees stated in col. 1, lines 30-60 that such a modification would ensure the exposure is accomplished by contacting the surface of the photosensitive medium with the print head of the apparatus to precisely locate the exposure plane and minimize flare and provide the most accurate placement of the patches and maximize the manufacturing system performance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-2, 4-5, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aosaki et al. (US 6,963,359) in view of Klees et al. (US 6,407,767).

Regarding claim 1, Aosaki '359 discloses an image forming apparatus (Printer Head unit 131, fig. 25) comprising:

a case (Case 140, fig. 25) accommodating a photosensitive recording medium (i.e., a photosensitive sheet and an image receiving sheet of the instant film 128; Col. 20, lines 1-2) and having an opening for exposing said photosensitive recording medium (i.e., a photo printer section for recording a full-color image on the instant film 128 of the film pack 125 placed behind the exposure opening 129a; Col. 19, lines 45-48);

a print head (Printer Head unit 131, fig. 25) having a lens (A micro lens array 142, fig. 25) for converging light and serving for illuminating said photosensitive recording medium with light (i.e., the light emitting elements 143-145 are focused in a line on the photosensitive surface of the instant film 128 along the main scan direction, the micro lenses 142a-142c for the light beams; Col. 20, lines 46-50, fig. 25);

wherein said print head is movable relative to said case in a secondary scanning direction (i.e., the printer head unit 131 is located near a top edge of the exposure opening 125a of the film pack 25, with its longitudinal direction M oriented perpendicularly to the advancing direction S of the instant film 128; see col. 20, lines 15-21, fig. 24);

wherein said print head is provided with a projection (i.e., a printer head unit 131 including a projection type printing head; Col. 19, lines 45-50, fig. 25, the corner of print head of fig. 25) which is offset in the secondary scanning direction with respect to said lens (the corner of print head of fig, 25 is offset to the side of the lens 142).

Aosaki '359 does not explicitly show the projection protruding beyond said lens toward said photosensitive recording medium and being held in direct contact with said photosensitive recording medium.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Klees '767. In particular, Klees '767 teaches the projection protruding beyond said lens (lens 30, fig. 1) toward said photosensitive recording medium (photosensitive media 34, fig. 1) and being held in direct contact with said photosensitive recording medium (i.e., the part of print head assembly 26 that is in contact with photosensitive media 34 is the projection; Col. 4, lines 25-30, fig. 1).

In view of the above, having the system of Aosaki and then given the well-established teaching of Klees, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Aosaki as taught by Klees to include: the projection protruding beyond said lens toward said photosensitive recording medium and being held in direct contact with said photosensitive recording medium, since Klees stated in col. 1, lines 30-60 that such a modification would ensure the exposure is accomplished by contacting the surface of the photosensitive medium with the print head of the

apparatus to precisely locate the exposure plane and minimize flare and provide the most accurate placement of the patches and maximize the manufacturing system performance.

Regarding claim 2, Aosaki '359 discloses the image forming apparatus (Printer Head unit 131, fig. 25),

wherein said case (Case 140, fig. 25) has a pair of side walls positioned on both sides of said photosensitive recording medium in the secondary scanning direction (i.e., the instant film 128 has a processing solution pod 128a along its top edge, the solution pod 128a is broken by the pressure of the developing rollers 133 while being advanced through the developing rollers 133. Thereby, the processing solution is spread between a photosensitive sheet and an image receiving sheet of the instant film 128; see cols. 19-20, lines 63-67 to lines 1-2), one of said pair of side walls being formed with an ejection orifice for ejecting said photosensitive recording medium to outside (i.e., designated by 129a is a cutout for the advance claw to enter the film pack 125 when pushing out the exposed instant film 128; see col. 20, lines 21-23, fig. 24),

wherein said projection is disposed opposite said ejection orifice across said lens (i.e., the printer head unit 131 consists of the multi-color projection type printing head 138 and a head driver 139 which are accommodated in a light-shielding frame 137. The printing head 138 has a light emitting element array 141 and a micro lens array 142 extending in the main scan direction inside a case 140; see col. 20, lines 24-30, fig. 25).

Regarding claim 4, Aosaki '359 discloses the image forming apparatus (Printer Head unit 131, fig. 25), wherein a size of said projection (i.e., the size of print head, figs. 4, 24) in a primary scanning direction is less than a size of said opening of said case in the primary scanning direction (i.e., the size that the print head can travel) and no less than a size of the image recording region (i.e., a dot that the print head prints) of said photosensitive recording medium in the primary scanning direction (figs. 4, 24).

Regarding claim 5, Aosaki '359 discloses the image forming apparatus (Printer Head unit 131, fig. 25), wherein said lens and said projection (The printer head unit 131 consists of the multi-color projection type printing head 138, col. 20, lines 24-26) are disposed adjacent to each other in the secondary scanning direction (i.e., the rows of the light emitting elements 143 to 145 extend in the main scan direction and are shifted from each other in the sub scan direction; see col. 20, lines 33-35, fig. 25).

Regarding claim 9, Aosaki '359 discloses the image forming apparatus (Printer Head unit 131, fig. 25), further comprising a transparent member (the instant film 128 of the film pack 125, fig. 22) for covering a light exit surface of said lens, wherein said projection is provided at said transparent member (i.e., the processing solution is spread between a photosensitive sheet and an image receiving sheet of the instant film 128; see col. 20, lines 1-2).

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aosaki et al. (US 6,963,359) in view of Klees et al. (US 6,407,767), and further in view of Anderson (US 2003/0226501).

Regarding claim 3, the combination of Aosaki '359 and Klees '767 does not explicitly show the image forming apparatus, wherein said photosensitive recording medium has an air vent for releasing inside air,

wherein said projection has a notch for avoiding interference with said air vent.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Anderson '501. In particular, Anderson '501 teaches the image forming apparatus (a printing device, fig. 1), wherein said photosensitive recording medium has an air vent for releasing inside air (i.e., the orifices extend through the side wall of the tube 24 so that pressurized air within the tube 24 creates air jets emanating from the orifices 9, 12 and 15; see page 3, paragraph [0054], fig. 1B),

wherein said projection has a notch (a wheel 610 with notches or transverse grooves 612, page 9, paragraph [0103], fig. 17) for avoiding interference with said air vent.

In view of the above, having the combination system of Aosaki and Klees and then given the well-established teaching of Anderson, it would have been obvious to one having ordinary skill in the art at the time of the invention was

made to modify the combination system of Aosaki and Klees as taught by Anderson to include: the image forming apparatus, wherein said photosensitive recording medium has an air vent for releasing inside air, wherein said projection has a notch for avoiding interference with said air vent, since the image forming apparatus, wherein said photosensitive recording medium has an air vent for releasing inside air, since Anderson stated on page 1, paragraph [0009] that such a modification would employs relatively small orifices, valves and nozzles for depositing the desired quantity and color of ink on the print medium, very fine grade inks are required in which particle sizes of the pigments within the inks are kept to a minimum to help keep the orifices, valves, and nozzles of the ink system from becoming clogged.

7. Claims 6-8, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aosaki et al. (US 6,963,359) in view of Klees et al. (US 6,407,767), and further in view of Ohba (US 2001/0026312).

Regarding claim 6, the combination of Aosaki '359 and Klees '767 does not explicitly show the image forming apparatus, further comprising a support member for supporting said lens, wherein said projection is formed integrally with said support member.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Ohba '312. In particular, Ohba '312 teaches the image forming apparatus (an image exposure apparatus, fig. 1), further comprising a

support member for supporting said lens (i.e., a laser diode, which is one of semiconductor light emitting devices and is used as a light source, and a collimator lens are incorporated in the light source assembly 124; see page 5, paragraph [0071], fig. 3), wherein said projection is formed integrally with said support member (i.e., by assembling the light source assembly 124 to the standing wall portion 122, the laser diode and the collimator lens are attached in predetermined positions of the light source unit 100; see page 6, paragraph [0071], fig. 3).

In view of the above, having the combination system of Aosaki and Klees and then given the well-established teaching of Ohba, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Aosaki and Klees as taught by Ohba to include: the image forming apparatus, further comprising a support member for supporting said lens, wherein said projection is formed integrally with said support member, since Ohba stated on page 1, paragraph [0001] that such a modification would relate to a scan-exposure device for scan-exposure of photosensitive materials such as printing plates with light beams emitted from light sources moving along a main-scanning direction or a sub-scanning direction.

Regarding claim 7, the combination of Aosaki '359 and Klees '767 does not explicitly show the image forming apparatus, further comprising a support member having a slit for inserting said lens and a recess connected to the slit,

and a supplementary member separate from the support member, wherein when one part of said supplementary member is inserted into said recess, another part of said supplementary member constitutes said projection.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Ohba '312. In particular, Ohba '312 teaches the image forming apparatus (an image exposure apparatus, fig. 1), further comprising a support member having a slit for inserting said lens and a recess connected to the slit (i.e., the optical system assembly 126 is provided with a long fixing bed 136; page 6, paragraph [0073], fig. 3), and a supplementary member separate from the support member (i.e., on this fixing bed 136, a converging lens holder 138 to which a converging lens is assembled; page 6, paragraph [0073], fig. 3), wherein when one part of said supplementary member is inserted into said recess (disposed in this order, page 6, paragraph [0073], fig. 3), another part of said supplementary member constitutes said projection (i.e., the light source units 100 are attached to the stage 106 with a predetermined spacing in a state in which the positions thereof are respectively adjusted so that light beams are focused and spot positions thereof are aligned in a line; see page 6, paragraph [0074], fig. 3).

Regarding claim 8, the combination of Aosaki '359 and Klees '767 does not explicitly show the image forming apparatus, further comprising a lens holder for surrounding and supporting said lens, said lens holder being inserted into said slit, wherein said supplementary member abuts against said lens holder.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Ohba '312. In particular, Ohba '312 teaches the image forming apparatus (an image exposure apparatus, fig. 1), further comprising a lens holder for surrounding and supporting said lens (i.e., a cylindrical lens holder 150 to which a convex cylindrical lens and a half-wave plate are assembled; see page 6, paragraph [0074]), said lens holder being inserted into said slit (i.e., the optical system assembly 126 is provided with a long fixing bed 136; page 6, paragraph [0073], fig. 3), wherein said supplementary member abuts against said lens holder (i.e., on this fixing bed 136, a lens holder is disposed in this order; page 6, paragraph [0073]).

Regarding claim 10, the combination of Aosaki '359 and Klees '767 does not explicitly show the image forming apparatus, further comprising a lens holder for surrounding and supporting said lens, said lens holder is inserted into said slit, wherein said transparent member abuts against said lens holder.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Ohba '312. In particular, Ohba '312 teaches the image forming apparatus (an image exposure apparatus, fig. 1), further comprising a lens holder for surrounding and supporting said lens (i.e., a cylindrical lens holder 150 to which a convex cylindrical lens and a half-wave plate are assembled; see page 6, paragraph [0074]), said lens holder is inserted into said slit (i.e., the optical system assembly 126 is provided with a long fixing bed 136; page 6, paragraph [0073], fig. 3),

wherein said transparent member abuts against said lens holder (i.e., a peripheral surface of the eccentric cam 116 abuts the leg portion 106A at the rotating drum 54 side due to a spring force of the plate springs 108; see page 7, paragraph [0088], fig. 3).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Deguchi et al. (US 6,147,697) discloses image forming point and when conducting exposure while moving a print head and a photosensitive material.

Maekawara et al. (US 6,121,993) discloses an image forming apparatus having a transport means which transports a print head or a photosensitive recording medium.

Tokuhara (US 5,099,282) discloses the auxiliary projection optical system formed on the photosensitive medium.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen H. Nguyen whose telephone number is (571)270-1229. The examiner can normally be reached on 9:00 AM-6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KING Y. POON can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/King Y. Poon/
Supervisory Patent Examiner, Art Unit 2625

/Allen H. Nguyen/
Examiner, Art Unit 2625